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Editor: J. A. NIXON, C.M.G., M.D., F.R.C.P.

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The Bristol Medico-Chirurgical Journal

" Scire est nescire, nisi id me Scire alius sciret."

WINTER, 1946.

THE THIRTY-FOURTH LONG FOX MEMORIAL LECTURE:

BY

PROFESSOR M. SKENE, D.Sc.,

Melville Wills Professor of Botany in the University of Bristol.

DELIVERED IN THE UNIVERSITY OF BRISTOL ON TUESDAY, DECEMBER 11th, 1945,

ON

PLANT HORMONES

SUBSTANCES WHICH CONTROL PLANT GROWTH

PLANT hormones are a group of organic materials, produced by the plant itself, and affecting its growth in a variety of ways. These substances have many similarities with the familiar hormones of the animal kingdom. Although it was suspected nearly a century ago that certain regulatory effects in the plant might be due to such substances, real knowledge of their nature and activities has been achieved only in the last twenty years. It came in an indirect way.

The plant is a sedentary organism; but its organs carry out a great variety of movements which are essential to its proper functioning. Of these the most important are the tropisms, or directed movements, set going by an external stimulus and taking place in a direction related to that in which the stimulus reaches the plant. An example is geotropism, the response to gravity which brings the main root vertically downwards in the soil and the main shoot vertically upwards in the air. Another example is phototropism, the response to unilateral illumination. The shoot grows towards the light, the leaf becomes so oriented that its blade is

normal to the incident radiation. To say that the plant *grows* towards the light is literally true, for the most characteristic mechanism of plant movement is a differential growth rate on the two sides of an organ: the upper side of a root grows faster than the lower and the root bends downwards. Such movements are necessarily slow in comparison with the muscular movements of an animal; often we note that they have taken place only after the lapse of days. Yet, with suitably sensitive methods of observation, the fact that a movement is in progress may often be demonstrated a few minutes after its start.

The phototropic movement is important for our subject and we must follow it further. It was first shown by Darwin that, in a reacting seedling, the region most sensitive in the perception of the stimulus of light is the extreme tip, while the reaction by bending takes place some distance back. If the tip is cut off, or merely shaded, there is no reaction or a very limited one. The response is therefore not a direct one. It might be said that the tip acts as an organ of special sense, that there is a conduction of excitation and that the more basal parts form the motor organ. The analogy with a reflex movement in an animal is striking but superficial. The plant possesses no nervous system. How is the stimulus perceived and how is the excitation conducted?

The attack on this problem succeeded because a highly suitable laboratory object was available in the seedling of the oat. The first leaf of this seedling is a white, cylindrical sheath, called the coleoptile. It is extremely sensitive to light and its phototropic movement is considerable after an hour or so. Moreover the seedlings can be easily raised in large numbers showing uniform behaviour. If the tip is shaded the coleoptile does not react. If 1 mm. of the tip is cut off, the coleoptile fails to react and also ceases to grow. If the tip is replaced the coleoptile grows once more and also reacts to light. The simplest explanation of this behaviour is that some substance is produced in the tip and diffuses downwards and that this substance is necessary for growth. That this is so was first definitely shown by the young Dutch botanist, F. W. Went,[1] in 1928. He was not, at that time, able to extract the substance with water or other solvents, but he devised another method by which its properties could be studied. He cut off coleoptile tips and placed them on thin sheets of agar jelly for an hour or two. The agar was then cut into little cubes. If one of these was placed on the stump of a decapitated coleoptile the stump started to grow once more. This is decisive proof that we are dealing, not with anything of the nature of a nervous impulse, but with a substance which diffuses first into the agar and from that into the seedling where it has its effect on growth. The substance was named by Went "auxin," and this term has since been used for the class of substances which we now know to affect plant growth.

Even more important than this demonstration is the fact that the method enables us to measure the amount of auxin and thus to bring quantitative methods into operation. Within limits the amount of growth is proportional to the amount of auxin. It is not practicable to measure the increase of straight growth. But, if one of the agar cubes is placed at one side of the coleoptile stump, the part below it grows faster and the coleoptile bends. The angle of bending may be readily and exactly measured and is a measure of the growth effect and so of the amount of auxin present. The technique is delicate and must be carried out under strictly controlled conditions, but, as a routine, is reliable and accurate. Went was able to show that auxin is an organic substance readily destroyed by alkalies and with a molecular weight of about 370. He also demonstrated the remarkable fact that its transport in the plant is polar—it moves only from tip to base and not in the reverse direction. It was shown that auxin is produced in the tips of many—and presumably all—higher plants, especially in the embryonic leaves, and that the auxin of different plants is probably the same substance.

Auxin could not be extracted from the coleoptile, partly because the amounts present are excessively minute; other and richer sources were sought for. It was found that such varied organic materials as yeast, moulds, maize germ oil and urine contained considerable amounts of auxin or of substances which had the same effect on growth. From urine were first isolated two organic compounds, called auxin *a* and auxin *b* and it was possible to determine their chemical structure. Later, a further compound, differing in its chemical nature from the first two, was obtained and identified as indole acetic acid. This has been of special importance, for it can be synthesised rather readily, and is available in pure form in quantities and at a price adequate for research. But, although it is now known that indole acetic acid does occur in the higher plant, it is highly probable that the auxin of the oat coleoptile is identical with auxin *a*. The activity of all these substances is astonishingly great. 1 mg. of indole acetic acid is sufficient to produce a 10 degree curvature in 25,000,000 oat seedlings.

We may return for a moment to the phototropic curvature. It has been possible to show, using the methods invented by Went, that the shoot of a plant bends towards the light from two causes: (1) part of the auxin on the illuminated side is inactivated, and (2) part is deflected, so that it passes down the dark side. The amount of auxin on the dark side is therefore relatively greater and that side grows more rapidly so that a curvature towards the light is produced. It may be noted that a similar explanation applies to geotropism. If a shoot is laid horizontal the auxin accumulates on the lower side, which grows faster and causes the shoot to bend up. The downward growth of a root is also due to an auxin effect, but here the relation to growth is more complex and is not yet fully cleared up.

The tropistic movements thus explained are secondary effects; the fundamental importance of auxin is that it is essential to growth. Growth is a very complex chain of events, but in the plant one most important link is the extension of the cellulose wall of the cell, a stretching which is accompanied by an incorporation of new cellulose molecules in the structure. The actual stretching is caused by the internal turgor pressure of the cell and it is either in rendering the wall more plastic or in the process of incorporation of new molecules that the auxin acts. We do not yet know the precise mode of action.

But this, though fundamental, is only one of the activities shown by auxin. Of others the best known is that on root production. If the base of a cutting is immersed in a very weak solution of indole acetic acid for a few hours the subsequent production of roots may be very strikingly increased. This has great practical importance. It has an additional interest from the scientific point of view, for the production of roots on a cutting begins, not with the expansion of the walls of existing cells, but by the formation of new cells and a new growing point by cell division. From the practical side a good deal of work has been done with rather disappointing results so far. It has been found that, in those plants which root fairly readily, the production of roots is accelerated and intensified by auxin applications. But the plants which root with difficulty are not much affected. These are, of course, the most interesting to the horticulturist, whose work would be much easier if artificial means of improving the striking of difficult plants could be found. The work on these problems was interrupted by the war and no doubt fresh ground will be broken when it is taken up again and the conditions of rooting are made clearer.

Already another approach to the problem has been made. The organic chemist is able to start with a substance like indole acetic acid and synthesize others related to it. For example, it is possible to substitute butyric, propionic and other organic acids for the original acetic acid. Or he may use a ring other than the indole ring and make substances like naphthalene acetic acid or naphthoxy-acetic acid. Some of these materials are at least as powerful as, and in some relations more powerful than, indole acetic acid. This has been a line of work which has produced important results in other connections, as in the development of the sulphonamide drugs and the organic arsenicals.

Another growth effect concerned with the formation of new cells, which we now know to be dependent on auxin, is the activity of the cambium. Cambium is a sheet of cells lying between the wood and the rind of woody plants. The divisions which take place in it provide the cells which form new wood to the inside and new bast to the outside and so bring about the growth in thickness of tree and shrub. In herbaceous plants cambium also functions, though its effect is less conspicuous. The cambium is dormant in winter

and breaks into activity in spring, the season in which the young cells it forms are so flushed with sap that they rupture easily and so allow the rind to be stripped from the wood. This activity starts with a renewed supply of auxin, formed in the buds as they begin to open. It is just below the buds that cambial activity starts, and, as the supply of auxin passes further down branch and trunk, so the activity of the cambium spreads downwards. It may reach the roots only some weeks after it has started in the branch tips.

Even more striking is the relation of auxin to another case of fresh growth—that which leads to the development of seed and fruit. In the higher plants pollen is transferred from stamen to stigma ; the pollen tube grows down and penetrates the ovule in the ovary ; the male nucleus, thus carried to the ovule, fuses with the egg cell there and fertilisation has taken place. From the fertilised egg cell develops the embryo which is found in the seed. The remainder of the ovular tissues, as the embryo develops, enter into growth and form the seed coats and endospermic food stores. The first impulse to this renewed growth may be given by auxin brought in by the pollen tube, for pollen is known to be a rich source. But, as soon as the embryo starts development, it produces auxin itself and so, as it were, catalyses its own growth. It also starts the growth of the ovary, which in turn develops into the fruit. This is the normal course, but we know of various cultivated plants which form fruits without pollination, fertilisation or seed production. Examples of such *parthenocarpic* fruits are the seedless raisins and oranges, the pineapple, the banana and some cucumbers. In these the ovary itself seems to produce enough auxin to start its development into a fruit. It has now been found possible to produce parthenocarpic, and seedless, fruits in a variety of plants by the application of auxin to their stigmas and ovaries. The tomato can be made to bear a full and normal crop of fruits, without pollination and containing no seeds, by applying a very fine spray containing minute quantities of synthetic auxins. This may make possible the solution of a problem of considerable economic importance. Many fruit trees lose a large number of immature fruits by fruit drop. A late frost may cause the whole of a crop of young fruits to fall. The whole of the apple crop in our district was destroyed in this way in 1945. The application of auxin may save the crop in such circumstances. It has already been found possible to prevent the fall of the young fruits, though not yet to make them swell and develop normally. Intensive work is in progress on this problem.

The formation of flowering shoots is controlled by many factors external and internal. It is now certain that an idea, put forward by the German physiologist, Sachs,[2] nearly a century ago, is correct and that the plant produces hormone-like substances which are essential for flower production. These are not the same as the auxins which control growth, and we do not yet know their chemical

nature, for they have not been isolated. The proof of their existence is indirect and has been obtained through certain curious relations of flowering to light and temperature. There are plants, like the strawberry, which flower only in the long days of early summer, that is, with long periods of illumination : and others, such as the chrysanthemum, which flower only in the shorter days of autumn. There are plants which flower only after they have been subjected to a period of low temperature in their youth ; such are the winter cereals, which are sown in autumn and pass the winter as seedlings. There is much evidence that such effects are due to the flowering hormones being formed only in the appropriate conditions of light or temperature. We can note only one point. If a plant which has been kept in the appropriate conditions is suitably grafted on one which has not, the influence—the hormone—is transmitted to the latter and it will then flower.

The higher plant, in contrast with the higher animal, is a very loosely knit organism. Large parts may be cut away without any serious damage being done, and pieces cut off may be rooted and give rise to new plants. But it nevertheless is an integrated organism developing harmoniously, producing a characteristic form, and flowering and fruiting in due course. How is this integration brought about ? Partly by external circumstance and partly by internal events. The latter may be nutritional, through the supply of water or of food substances to one part or another. But internal regulation through the auxins and other hormones is of vital importance. Auxin produced in one part affects the growth, whether by extension or by cell division, in others. The flowering hormones, probably formed in the leaves, determine the onset of reproduction. One further instance of this internal regulation may be given. A most surprising discovery was made when it was found that the same substance which stimulates growth in most conditions, can also inhibit it. In the angle between each leaf and the stem which bears it, lies a bud. This bud may develop into a branch or it may lie dormant. In trees and shrubs most buds lie dormant : if they all grew out the result would be a thicket and not the shapely tree we know. It is the *presence* of the main growing tip which keeps the buds dormant. If the apex of the shoot is cut off the buds lower down, or some of them, grow out. This is, of course, how the gardener produces a bushy plant. But if the tip is cut off, and indole acetic acid is applied to the wounded surface, the buds remain dormant. It is the flow of auxin from the tip which prevents growth from starting. Various theories have been put forward to explain this surprising fact but none that is satisfactory. The effect is certain, but the explanation is yet to be given.

The work surveyed has taken place in the last twenty years and it is evident that a whole new field in the physiology of growth has been opened up. It is interesting to look at the way in which this

development has taken place. It started with a problem, the mechanism of the phototropic movement, of great interest to the scientist, and indeed to anyone attracted by the phenomena of plant behaviour. It was not a problem the solution of which might be thought likely to give results of any practical import: yet practical applications have emerged. It is an example of the way in which the establishment of some fundamental principle is the preliminary to developments which could not have been foreseen. Among these may be developments of practical importance. The deliberate, frontal attack on such a problem as the production of parthenocarpic fruit could have been planned; but whatever resources had been used there could have been no guarantee of success. The unplanned, or better, natural advance of science, in seeking primary knowledge of growth processes, made the way clear for the solution of all sorts of derived problems. In the following of these new lines the planning of research is in place.

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[2] Sachs, *Arb. Bot. Inst. Würzburg*, 1880, 1882, vols. i. and ii.

"NIGHT-NURSE'S PARALYSIS": A TEMPORARY TONIC MOTOR PARALYSIS.*

BY

G. DE M. RUDOLF, M.R.C.P., D.P.M., D.P.H.

Hon. Psychotherapist, West End Hospital for Nervous Diseases; Psychiatric Specialist, Ministry of Pensions.

ON a beautiful evening of April, 1943, I gave a talk on elementary psychology to a small party of R.A.M.C. orderlies and convalescent patients at a detached hospital at Gibraltar. But this simple talk led up to a series of events of which to-night is one. At the end of my short talk, an orderly rose and said: "Sir, will you tell us what night-nurse's paralysis is?" I looked at him, thought, looked at him again, tried further thought, and finally said: "No, certainly not. I've never heard of it." The orderly then gave a full description of the condition, which was confirmed by two other orderlies in this party of about a dozen men. I returned to my billet a sadder man. After several years of neurology and over twenty years of psychiatry, to be told of a common condition of which I had never heard by a temporary full private of the R.A.M.C. seemed, to put it mildly, humiliating. But a thought occurred—perhaps the hind-limb of the trick-cyclist was being elongated, especially as I was the first psychiatrist to be on the Rock.

So I discussed the condition with other medical officers, but found, to my surprise, that they too were entirely ignorant of it. One Sunday afternoon, the Registrar and I determined to prove if the condition really occurred. Unexpectedly and rapidly, so that our journey could not be passed from ward to ward, we visited the Sisters on duty. One had not heard of the condition, one had known of it in a friend, and one had suffered from it. The proof was sufficient. I then began a systematic individual enquiry from doctors, nurses, and others, with the result seen in Table 1.

* Paper read before Bristol Medico-Chirurgical Society, 8th May, 1946.

Table 1. GIBRALTAR ENQUIRY.

Occupation	Enquiries from	Suffered from attacks	Knowledge only of condition
Nurses (M. & F.) ..	67	12	15
Naval Officers (Executive)	15	2	5
Printers	21	2	5
Compositors	19	0	1
Radar Operators ..	60	0	0
Doctors	34	0	1

The enquiry comprised the questioning of each person individually as to whether he knew of the existence of the condition, which I described and later named. Whilst this enquiry was being carried out, a party of Consultants visited the Rock. So I asked one of them if he could tell me something about night-nurse's paralysis. He looked at me with an indulgent, kindly smile, not believing that the condition existed. He crossed the hall of the Bristol Hotel and spoke to an Army Sister who had come off the ship with him. But he had "had it"; so had the Sister, three attacks.

No reference to night-nurse's paralysis could be found in text-books, the editor of the *Nursing Mirror* knew of no article on it in the nursing periodicals, senior officers of the War Office A.M.D. were unaware of the existence of the condition, and the Librarian of the Royal Society of Medicine could find nothing about this state in the literature. The condition consists of a sustained immobility involving the entire voluntary musculature, although full consciousness prevails and the subject can see and hear. Awareness of the inability to move is present. The musculature is rigid, and considerable force is needed to push the sufferer aside. Attacks last from a few seconds to as many minutes, and the onset is insidious, the subject suddenly finding he is unable to move. The attack may begin when the individual is standing or sitting or when moving, as in a nurse who was turning over the pages of a report book when he became "fixed" with his hand holding up a page. Attacks occur in the presence of others and when the subject is alone.

Although no ill effect follows an attack, with the exception of a very brief period of confusion if the subject is kicked or shaken out of the condition, serious results of attacks might occur. In one instance, a minelayer, fully-laden, would have collided with a cruiser if a second officer had not been on the bridge of the cruiser and pushed aside the navigating officer and acted for him. A calico-printer watched twenty yards of calico slowly tear without being able to move to stop the machine. A printer watched his paper burn without being able to attempt to extinguish the fire, a near-by foreman doing so.

The number and frequency of attacks vary. One naval officer in nearly forty years had one attack, in which he allowed an electric motor to burn out, as he could not move to turn it off. Another officer passed through forty to fifty attacks in from four to five years. The condition is widespread. I have records of attacks occurring in the Arctic Ocean, Montreal, Belfast, Edinburgh, Glasgow, Liverpool, Macclesfield, St. Albans, London, Woolwich, France, Gibraltar, Salerno and Cairo.

The hospitals in which nurses of this series have been affected have been teaching (Guy's), mental and military.

The nature of the condition and cause of its onset are not clear. It is easy to exclude many states of sustained immobility (Table 2) but less easy to include the condition under any heading.

Table 2. CAUSES OF GENERALIZED IMMOBILITY.

With Tonic Muscles.	With Flaccid Muscles.
Voluntary concentration.	Sleep, usually.
Fear.	Cataplexy.
Catalepsy.	Narcolepsy.
Vaso-vagal attacks.	Coma.
Schizophrenia.	Concussion.
Post-encephalitic states.	Shock.
Day-dreaming.	Hysteria.
Epilepsy.	Epilepsy.
Hysteria.	
? Sleep Paralysis. ?	

A year ago I read a paper on this condition before the Association of British Neurologists, where the opinion was expressed by a senior neurologist that the state was cataleptic. At this year's meeting, he was less certain. But catalepsy appears to be the most suitable condition with which to identify the state. Many descriptions of catalepsy confine it to *flexibilitas cerea* in which the limbs remain in a position in which they are placed by an observer. But Michell Clarke, forty-two years ago, gave a description of generalized catalepsy which describes this state. The varying appearance of the condition amongst different classes of persons is of interest. The attacks appear to be more likely to occur amongst persons liable to be stationary. Amongst printers the condition is well-known, amongst compositors it is rare. The absence of attacks in radar operators may be due to the usual short period of duty at the screen of thirty minutes.

I was unable to find evidence of the condition in the R.A.F., although its occurrence in pilots flying on "G" might be expected, as on long-flying anti-submarine patrols, where "George," the automatic pilot, is used during the patrol of either twelve or twenty-four hours' duration. Experienced pilots make mistakes towards

the end of these patrols, but these may not be due to the tonic-paralysis now being discussed. Unfortunately, my information in this field is too limited to be of value as, although the Powers-that-Were allowed me to observe the Services at duty, as in destroyers in action, in a submarine submerged, or in aircraft over the African desert, they refused to agree to the suggestion of the R.A.F. that I should go in a Catalina on a long patrol.

To recapitulate, the condition known amongst nurses as night-nurse's paralysis occurs amongst others. It consists of a temporary tonic motor paralysis of insidious onset. Consciousness is clear. Its distribution is widespread, it is well known amongst certain classes of persons, but little known amongst doctors. It bears a strong resemblance to catalepsy as described by Michell Clarke, but whether its cause is psychological, chemical or neurological, or a combination of two or three, is not known.

CAMPAIGNING NOTES, 1940–45

BY

COLONEL MARTIN HERFORD, D.S.O., M.B.E., M.C., M.B., CH.B., R.A.M.C.

Rockefeller Research Fellow.

TOGETHER with other Bristolians, most of whom are now out of uniform, I have been asked to record a few of my personal experiences while in the Army. Where should one begin? The events of the last few years seem already far away. Like so many, I joined the forces and saw something of the world. Never have so many travelled so much and often, apparently, so much at random. Events crowd each other out of memory, and at times even years get mixed.

When the war started I was House Surgeon to Mr. Wright, and like many others was "fixed" at my post in expectation of heavy air raid casualties. Nothing happened. Finland was fighting, and for a variety of rather ill-defined motives, including pacifist ideas and a dislike of wearing uniform, I volunteered to go over and do medical work in Finland. The story is complicated and, in retrospect, full of the improbable. The organization was phoney, and the plan futile. I arrived in Finland with about two hundred others to join the advance guard of about a hundred, forming the nucleus of the British Contingent of the International Volunteer Brigade. The date of our arrival was 13th March, 1940, the day after the Russo-Finnish armistice was signed. There was a possibility, or so many of us thought, of further fighting and a spread of hostilities to Scandinavia, and so we stayed. I liked the Finns, and made many friends.

It seems odd now to think that Britain tried to go to war with Russia and Germany at the same time! It took ten months to get out of Finland and several attempts failed. Meanwhile, Norway fell, Belgium and Holland were invaded, and the collapse of France was followed by the astonishing evacuation of Dunkirk. Daily and anxiously we listened to the disastrous news. Some of the Finns were so anti-Russian as to be pro-German; and some, particularly the Swedish element, were pro-German by association. They and all the others expected England to ask for terms.

I was lucky, and in December, 1940, through a contact with Tanner, the Finnish Minister of Finance, and Möller, the leader of the Swedish Social Democrat Party, I had a personal interview

with the famous Madame Kolontay. She had been Soviet Minister in Stockholm almost since the Revolution. Once a noted aristocratic beauty, and a friend of Stalin, Madame Kolontay ruled her associates more like a queen than a comrade, and I was much impressed by her presence and ability. Others had had to wait six months or more, but my visa came through in four days. I was a little disappointed, because it meant leaving Stockholm at once, and I had just made arrangements to see all the chief hospitals in the area. I returned to Helsinki, but had to wait three weeks for a visa to go through Syria; but in the meanwhile snow arrived and I was able to ski. On January 4th, 1941, I started my journey, via Leningrad, to Odessa, Constantinople, Ankara, Beyrut, Haifa and Cairo.

It was most interesting to have a glimpse of Russia. A few hours loose in Leningrad, without permission, showed me a poverty-stricken city and a population nervous of contact with a stranger. In the train I was lucky to be alone in a compartment with a mining engineer and his mother. He was evidently a senior official, and spoke a little German. We became quite friendly in the course of the 48-hour journey, but he would talk only if the train was in motion, the corridor door closed, and he spoke quietly, leaning forward in his seat and watching the door. Before the train stopped in Odessa he said he would like to say good-bye, because in Odessa we must not know each other. We parted most cordially, and on the platform passed as though we had never met.

In Odessa there was an organized tour from the official travellers' hotel, where I stayed with half-a-dozen assorted travellers, including two King's Messengers from the Embassy in Moscow. We saw the outside of many fine buildings, including the city hospital. I asked the guide, a charming girl who spoke perfect English, if I might see the inside of the hospital. She said "No," and when I asked why, she looked embarrassed, and finally said, "But why do you ask? Would you do this in another country? Doctors there would not want to show you their work!" She was incredulous when I assured her that in all countries doctors were delighted to show their hospitals to visitors from abroad. She promised to inquire, and later told me that unfortunately it was not possible for me to see the hospital. I did, however, see a performance of "*Esmeralda*" at the Opera, and that was a wonderful experience. The Russians are proud of their Opera.

It may well be several generations before the Russian standards, as a whole, come anywhere near the level of developed Western countries. Meanwhile, many are in a very primitive state, and everywhere very sensitive—a sensitivity stimulated by virulent propaganda and much distorted information.

The people may not know what they miss, and outsiders may not know what the Russians lack. They are taught that there

are many evil and scheming enemies ready to attack Russia, and freedom of speech is unknown in a rigid Police State with iron discipline.

On reaching Egypt on 19th January, 1941, I went to the Embassy with an introduction from the British Minister in Finland to the Ambassador, but having lost all count of time, called on a Sunday, when of course there was no one there. However, two days later I had my commission in the R.A.M.C. and was posted to the 63rd General Hospital at Helmieh. The first time I wore service dress is vivid, for I got mixed up with the belt and walked down to the Mess with the shoulder strap back to front and over my left shoulder.

Five weeks later, the O.C. Medical Division was posted to take No. 24 Casualty Clearing Station to Greece, and I persuaded him to take me. We sailed in convoy on 9th March, 1941. On the voyage I remember an officer of the 4th Hussars asking if anyone knew the difference between going to France and going to Greece. The answer he provided was that, in the first case, no one expected Dunkirk and it was sucessfully evacuated. In the case of Greece everyone expected it to be evacuated and did not think it would be successful. For me this was a new angle. I was guileless and optimistic. I had a tennis racquet with me and all my kit.

Greece in Spring was very lovely. We spent a week at Kyphissia near Athens, and on a glorious afternoon, after a fall of snow on a wild night, I climbed Pentelicon and looked over Boeotia to Marathon and on the other side across the bay of Salamis. The sun shone and snowdrops and crocuses were bursting through the snow.

From here we moved near Larissa and waited for our equipment. There was no sense of urgency and the weather was perfect. In the distance was snow-covered Olympus, and in the foreground rolling downs, fallow and green shooting corn. Large flocks of sheep grazed quietly under the guardianship of huge and very fierce dogs. Then suddenly came a warning to expect paratroops. Everyone became security minded and passwords and emergency plans were the order of the day. A C.M.P. corporal came to test our security. We tested his and found he had no identity card and had forgotten the password. He was much abashed, but managed to get someone to prove his *bona fides*.

Shortly afterwards came news of the German break-through in the Monastir gap. Orders and counter orders came in a flood, and the Sub-Area controlling the district, to which I had just been attached as "dog's-body," or unofficial D.A.D.M.S., moved back. No. 24 Casualty Clearing Station and a Company of No. 189 Field Ambulance remained. I asked if I might stay and do liaison work between them and ambulance railhead about thirty miles away. The next three weeks, as we moved back and confusion grew worse and worse, were spent almost entirely on a motor-cycle. Contact with formation H.Q. was soon lost and I enjoyed using the authority of the A.D.M.S. It was impossible to get a clear picture from

anyone and units hid so successfully that it was very difficult to find them. The roads were vile and the German planes numerous, traffic was forced off the roads in daylight, but a motor-cycle was fairly inconspicuous. One could usually tell if there were planes about by the behaviour of the adjacent Greeks. They were as sensitive as magpies in a wood. Except once or twice I got warning. Drivers who had to be on the road seemed to drive as fast as they could between points. If they were attacked, this meant that they swerved off the road and crashed because they were unable to pull up. I thought it better to go slow if I thought there was anything near, so that it was possible to pull up quickly and make a dash for cover.

At night the roads, which were nearly all on embankments, were jammed and the number of vehicles upset into the fields was astonishing. On the whole, ambulances were respected.

At one ambulance railhead, Thebes, there were some unpleasant moments. A hospital train was in a small station crowded with rolling stock. Early in the morning it was loaded, and then the Germans started an intensive *strafe* of the whole area, including the station. Most of the glass in the train was shattered and woodwork splintered. The quiet courage of the wounded, who could do nothing to help themselves, was something never to be forgotten. Three out of four locomotives available were damaged, and several lines blocked. Attacks were frequent throughout the day. Urgent messages were sent for ambulances to evacuate the train, and in the interval I found occupation in trying to get the remaining locomotive up to clear the train out of the station. The Greek drivers went off and I chased them with a rifle. In case of accidents I got them to show me how to drive and did some of the shunting myself, which was rather entertaining. So engrossed was I in shunting and using gradients to roll wagons out of the way that when I came back to say the line was clear the train was almost evacuated. The attacks were unsettling, and once I was standing by the engine just outside the station when a Messerschmidt made a low level sweep and came straight for it. I dropped flat, but the plane shot over the engine without firing. I looked up to see the engine-driver whom I had recently chased looking out of the cab and grinning at me.

Finally, in the afternoon we drove the train out of the station. It was essential to get it away as there were only two or three ambulance trains in Greece. For a short while before leaving there had been a lull, but when just clear of the station the *strafe* started again and a bomb hit the platform where the train had been. The train was very clearly marked with red crosses, but was in a target area. General experience in Greece was that the Germans respected the Red Cross.

When I finally reached Athens the general evacuation was beginning. I was asked by the D.D.M.S., Brigadier Large, if I

could drive a lorry. He said there were no drivers, there might be fighting in the Peloponnese, and medical stores were urgently required. I was given a three-tonner, which I took out to the central medical store with instructions to take what I wanted. There was no one available to load so I enlisted the services of stray Greeks who were rewarded with blankets and primuses. I started off in the afternoon, and watched Germans dive-bombing shipping along the coast near Athens. Luckily I got to Argos before the night jam began.

In Argos I was met by the local police, who asked if I was a British Officer. They said there was someone on the phone with an urgent message from Athens which could only be given to a British Officer. The message was, I found, an urgent one from the C.-in-C. Mediterranean, concerning a change in plan of evacuation for the night. Could I, the speaker said, find a senior officer to whom it could be delivered ? The request seemed odd, because there was supposed to be a senior officer in the neighbourhood in charge of beach arrangements. No one seemed to know his whereabouts, and he certainly had no one in touch with the 'phone. I stood in the road flashing a torch and flushed no less than three brigadiers from the head of a convoy just arriving. One of them took the message, and I stood in the background while they discussed the merits of drinks and laughed about their complete lack of knowledge of what was happening. The apparent lack of contact between Athens and Argos, evacuation centres, seemed very strange.

A *recce* party was just setting out to go further down the Peloponnese, and I followed them all night in my lorry. At daybreak we were near Tripoli, and I fell asleep at the wheel and was lucky to avoid a smash. An Australian from the *recce* party whom I got to drive, wrecked the lorry within ten minutes, and then hurried off to join the beach party. I sat by the lorry but could not keep awake. Each time I jerked awake I found the peasants had looted more from the lorry. Afterwards someone said that they only refrained from taking more because they liked the British. I pitied their enemies. Later I reckoned that in seventeen days I averaged less than four hours sleep in twenty-four. There was no transport within miles, and it was a lucky chance for me that the Military Attache from Athens, Colonel Jasper Blunt, was passing. He helped to salvage essential stores, and asked me to join his small party to be evacuated by caique from Monemvasia. After a few hours sleep and a shave I took my motor-cycle, rescued from the lorry, and went down to Kalamata to see what the position was there. I could find no one in authority and the organisation appeared to be very ineffective. The *recce* party which I had followed in the night consisted mainly of Signals, and I had given them some Field. Ambulance panniers to take on in case I could not get through. I found them in an olive grove with an Australian ambulance which

they were using for transport. There seemed to be no useful purpose in remaining at Kalamata; the area was large and it was difficult to find anyone in authority. I retrieved some of the panniers and the ambulance, and in the morning came back to Tripoli, to see how the bulk of the stores could best be used. As I left Kalamata many lorries were arriving crammed with Australians who had been travelling all night, and all along the road were large numbers of Yugo-Slavs who had fought at Monastir. They were hoping to be evacuated from Kalamata. One old veteran, an officer, who spoke French, said: "In the last war the British always gave us lifts, now we have to fend for ourselves and it is a case of devil take the hindmost." He looked worn and sad. He and all the British troops were captured at Kalamata, owing to the infiltration of a small detachment of German troops who upset evacuation plans. Their infiltration was possible chiefly because of bad organisation which allowed them to drive "straight up the road." There appeared to be no defences.

Arriving in Tripoli I learned that evacuation was to be speeded up, as the Germans were approaching from Patras. The New Zealanders were providing the rear-guard, and were really first-class troops. They had a medical officer, Fisher, and plenty of stores. I therefore left the ambulance and most of the stores with the local Greek hospital, where there were some badly wounded British casualties. After dark our party left Tripoli, and we were joined by several officers, among them the man who had sent the urgent message from Athens to Argos. Next day we spent at Monemvasia listening to the sound of distant bombing and the constant drone of German planes exploring the neighbourhood, flying low and machine-gunning at intervals to get troops to give away positions. The bombing, we learned later, signalled the sinking of a crowded evacuation ship and two destroyers, the *Wryneck* and *Diamond*, which attempted rescue work. Owing to ceaseless escort duty they had run out of ammunition, and the ship had taken too long to load and was caught near the coast in daylight.

In the afternoon I was eating some bread and salmon in a hut when the door opened and an elderly officer walked in. All I saw was a single pip and "something." Out of courtesy I stood up and asked what I could do. In a gruff voice the visitor said "I am General Freyburg. I am looking for . . ." I was intrigued to see what a general looked like and made a mental note to recognise the insignia of rank the next time I saw them. At dusk we were relieved to hear the chug-chug of the caique, and after dark the whole party, about fifteen, including Colonel Quilliam, the D.M.I. Greece, went on board. Some of my precious panniers were also loaded as we were making for Crete via Kythera. There was a fresh breeze and a short choppy sea, overhead brilliant stars with

dark banks of cloud. Early next morning, 28th April, we reached the little harbour on Kythera where we were going to lie-up for the day.

During the morning there were several visits from German planes. An ancient British Walrus plane came over and was attacked by two Dorniers. It was an amazing sight, the two Dorniers were swooping from all directions, and the old Walrus dipped and side-slipped nearly at sea level until gradually they faded away in the distance. Later I heard that the Walrus escaped: a masterly performance.

In the afternoon, which was brilliantly clear, I climbed with another to a small monastery on the highest point of the island, about two thousand feet up with a wonderful view. The water supply of the monastery was a large rainwater roof tank, beautifully fresh and ice cold. It had for years been deserted except by shepherds. When we returned we found a message had been dropped by a seaplane to say that a cruiser was coming in the evening to take off 750 R.A.F. men. We had not known they were on the Island, but contact was made through the locals, who found them on the other side. It was decided to leave the caique to go to Crete with two Greeks, and after dark, when the cruiser *Auckland* arrived, we got aboard and were able to direct them to the R.A.F. Next morning we arrived at Suda Bay in Crete where we saw the mast-tops and wrecks of many ships. The R.A.F. were disembarked, but Colonel Quilliam asked me to go on with him in the cruiser to Alexandria. It had been an interesting introduction to the Army, and good fortune had given me a useful job and opportunity for independent action.

The next two years were spent in the Western Desert, first with 7 M.A.C. and then with 16 M.A.C., backward and forward in the various desert "stakes." It was curious to note how many began to think that it was almost natural and inevitable that first we should advance and then the Germans, then another British advance.

The advance in November, 1941, I shall always remember vividly because of the number of tanks we lost. Wavell has recorded the battle in his despatches as one of the few occasions in history when an army has advanced against an enemy with almost equal force and in some respects better guns. The German 88 mm. was deadly. The desert was littered with our tanks singly and in groups of half-a-dozen or more. Each group we met, we thought: "Now these must be German," but they never were, partly because the German recovery system, even in retreat, was so good. The gallantry of our armoured troops was beyond praise.

Later came the battle which led to the loss of Tobruk and the retreat to Alamein. I had command of No. 16 Motor Ambulance Convoy, and had a strenuous time trying to keep contact with constantly moving medical centres over a trackless desert. Locations were map references in space without mark, and it was all map and

compass work. At the beginning of the battle hopes were high, and I remember at Corps H.Q. they were most optimistic. The German tank losses were reported to be very great and the R.A.F. pounded them in the "cauldron": victory was in sight! Then came the disastrous day when we lost the bulk of our armour and the retreat began, but few expected to go back to Alamein, and all thought Tobruk was secure.

We were in the vicinity of Tobruk when one morning an Auster plane landed nearby, and I asked the pilot over for a drink. He said that orders to *recce* a landing strip for Kittihawks had just been cancelled, and air-cover for Tobruk withdrawn, which meant Tobruk had fallen. This was the first news we had, and when I passed it on to the A.D.M.S. 7th Armoured Division he was incredulous. No one thought it was possible, everyone had been thinking in terms of the relief of Tobruk at an early date. Later, stragglers from Tobruk who had broken out came into the camp and we heard more of the story of confusion and unpreparedness. Some of them were very bitter, and bewildered by the way things had happened.

Subsequently, in Cairo, I heard that on the night of 12th June they were ready to announce a great victory, and on the 13th June had instead to accept retreat.

Back at Alamein there was fluctuating fighting, and my car went over a recently-laid German mine. This sent me out of the desert for a while, and I missed the great advance. In an effort to follow up I got myself posted from No. 15 (Scottish) General Hospital to No. 99 Sub-Area, which I heard was bound for Tripoli non-stop. Instead we went to Alamein to do salvage work, suffocated by swarms of flies. It was a bitter disappointment. In April, 1943, I was posted second in command No. 200 Field Ambulance. In due course we landed in Sicily with No. 231 (Malta) Brigade in an independent Brigade Group. A finer set than the "Malta" Brigade I never hope to meet. My company was with the Brigade while the rest of the Field Ambulance were working for Corps, so we had a gloriously independent time. The Brigadier (now General Urquhart of the 1st Airborne Division), was worth a brigade by himself. How he survived is a miracle. The difficulty was to keep up with him. The brigade casualties were about the highest in Sicily, but they had done a grand job.

After the fighting was over we spent a wonderful fortnight in a baronial mansion at Piedmonte with a glorious view of Etna and over vineyards leading down to the sea, with sunshine and grapes abounding and much good wine.

Next came an independent landing in Italy at Porto Venere, beyond troops advancing from Reggio. Plans were a bit mixed as the landing point had been changed three times in almost as many days. Ultimately, instead of landing before dawn, much remained

afloat when daylight came. Steep hills overlooked the little harbour of Porto Venere, and the Germans played havoc. By nightfall there were about 300 casualties and the position was not bright. The casualty centre had been bombed and mortared and so moved to a railway tunnel one-and-a-half miles long, the other end of which was later in enemy hands. A slight gloom was dispelled by the sudden news of a landing at Salerno, the Italian collapse, and the arrival of *recce* units of the 5th British Infantry Division which had pushed ahead full speed to our assistance. Next morning tank craft took off the wounded, and we worked peacefully in the sunshine looking at olive groves and a placid bay. It was hard to reconcile with the previous day. All through the war it was almost unreal how suddenly death came and vanished, leaving birds singing and the country beautiful.

A month later the Brigade was withdrawn to Sicily and we spent a glorious month in Taormina, the beauty spot of Sicily, waiting for a boat to England. The voyage was uneventful except for a few alarms. We heard the escorts sank two submarines. In the Irish Sea, the escort flushed a submarine with depth charges and fired at it. The submarine replied indignantly, and there was a brisk exchange before they realised it was British. We were a day ahead of schedule and the submarine had had no warning. We arrived at Avonmouth in November, 1943, and were sent straight on to near Ipswich. In mid-March we went to the invasion concentration area in the New Forest. The Brigade had been six years in the Middle East, three hard years of which were in Malta. They were now put in thick woods, eight men to a leaky bell-tent, no floor-boards and much rain ; there was ice on the water and many were flooded out. There were no recreation tents, nor drying tents. At first we were confined to camp with security plus plus. Not unnaturally, the number " absent without leave " was phenomenal, but they all came back for the fighting.

Two days after I had been briefed with the C.O. and seen models and plans of the invasion point, and we were getting " all set," a sudden posting came to take command of No. 163 Field Ambulance. The translation to Hampstead in comfortable billets out of the tension was unbelievable. The 231 Brigade had joined 50th Division and landed in the assault wave in Normandy. Their casualties then and after were very heavy. We landed a month later, and joined 30th Corps. We had a forward role from then until after the 1st Airborne landing at Arnhem. The rapid advance through Belgium and Holland and up to the Rhine at Arnhem was fascinating. The entry into some of the towns was unforgettable. The tanks were mobbed by hysterically happy crowds.

My unit went with the medical support accompanying the armoured striking force to join the two American Airborne Divisions dropped between the Escaut Canal and Nijmegen. The aim was to

relieve the 1st Airborne Division fighting at Arnhem. Unfortunately, this was not possible, and reports were received of large numbers of wounded in need of medical supplies and assistance.

The 1st Airborne reserve medical supplies were given to No. 163 Field Ambulance, with instructions to go forward and see what could be done to give aid. Attempts to cross the river were unsuccessful, and so on 24th September I called for four volunteers and with Captain Lewis of the 1st Airborne, who was unfortunately killed that night, went down to the river under cover of the Red Cross. We found an abandoned assault boat and took over some supplies. I left the party by the bank and went forward to reconnoitre. There was a lot of noise, but it was impossible to tell who was firing at whom. The exact location of the 1st Airborne troops was uncertain and, not unexpectedly, I entered the German lines. I demanded to see the senior officer in order to request passage or, if refused, the safe return of my party. I was blindfolded and for about an hour was led from place to place to find an officer sufficiently senior to make a decision. Ultimately they refused, but said my party would be returned, while I would be held for the night. Later in the evening they said I would be regarded as a prisoner, but I took a very strong line and, ultimately, it was decided that next day I should go to Apeldoorn and discuss matters with the senior medical officer in the region. Unknown to me, the A.D.M.S. of the 1st Airborne Division, Colonel Wanack, had that day approached the Germans to request evacuation of the wounded.

Next morning I met the German A.D.M.S. and it was arranged to establish a British hospital at Apeldoorn, staffed by Airborne medical personnel, many of whom had already been captured. About two thousand casualties passed through this centre. They came in exhausted and battered by eight days of ceaseless fighting, short of food and water.

Many had been re-wounded and many killed in the casualty stations. Yet their high morale and invincible cheerfulness was almost unbelievable. It was not possible to think of them as prisoners. At Apeldoorn a large barracks was allocated for the hospital, and the first night with negligible equipment and very few medical personnel we had to cope with over seven hundred, chiefly walking wounded. At 5 a.m. the next morning a German officer came to say that five hundred were to be detailed for evacuation by train at 8 a.m. to make room for the further large numbers expected. It was necessary to go round and wake the wounded from what was in many cases their first sleep for many days, and yet there was no murmur of complaint from any of them and they went off singing.

A large number of Airborne medical personnel, with Colonel Wanack in charge, organized the hospital, and it was a privilege to be with them. They were dead tired, yet indefatigable and cheerful.

I acted as intermediary with the Germans and Colonel Wanack asked me to be his second in command. There were several thousand German wounded in the area and we emphasized that British troops might break through at any moment. It was in their own interest, therefore, to treat our wounded well. This attitude was successful, but later the Germans recovered confidence, and many wounded and medical personnel were evacuated to Germany, and it was evident that all movable wounded would follow. I therefore decided to try and return to the British lines, taking a list of the casualties which had been compiled in the hospital. On a particularly wet and dark night I climbed out of a window and slid down an improvised rope of blankets with one of the Padres, Dan McGowan. We crawled past the sentries, and it was so dark that we nearly bumped into one or two of them. Luckily they were preoccupied by desire to protect themselves from the rain and wind.

After a three-day trek, travelling by night, using map and compass, and hiding by day, we arrived at the Lower Rhine at the point at which we had decided to cross. Unfortunately, near the bank, where we had to keep very quiet and crawl, we became separated. As it was almost dawn, I decided to swim across, expecting McGowan to follow. He did not come and I learnt later that he was recaptured.

On the far bank I found the 101st American Airborne troops, whom I was glad to meet. They marched me off to establish bona fides and, after a sleep, passed me through to No. 30 Corps H.Q., where I was able to deliver the list and give news. It was now 19th October and, in the interval, fighting had settled down for the winter in front of Arnhem, while my unit had been withdrawn to Antwerp. I learned that the Germans had kept the supplies, but sent back the men who had crossed the river with me.

In Antwerp it was at first pleasant, but when the buzz-bombs and rockets came in numbers the place " went dead " and was rather depressing. Three times we prepared to move and three times the place we were going to was damaged. I kept the men working one Saturday afternoon preparing to move and the cinema where most of them had intended to go got a direct hit ; we were lucky. My batman and driver for many weeks kept making remarks about their miraculous escape.

Then came the Rhine crossing and we were moved up to work in Belsen Camp which we reached ten days after it was opened. Piles of corpses lay everywhere naked and emaciated, and huge grave pits were being filled with thousands of bodies. Sub-human creatures prowled about apathetically, and the huts were so crowded that it was impossible to tell the living from the dead. No. 32 Casualty Clearing Station and No. 11 Light Field Ambulance had done magnificent work, and the way my fellows settled down to help was grand. I was very proud of them. Finally, two General Hospitals

arrived and we moved on towards Luneberg to take over another " horror camp " at Neuengamma near Hamburg when it was reached by our troops.

The Germans were fighting in battle-groups at this time, and on a reconnaissance I made contact with one group and demanded entry into Neuengamma. They took me blindfold to see their commander. He assured me the camp had been evacuated, and I assured him they would be held personally responsible if we were denied entry and subsequently found anything wrong. I told them something about Belsen and they were incredulous. In a conversation with several officers, they likened Hitler to Jesus Christ and expressed the most fanatical sentiments. I returned to our lines and alternative plans were made. Later we found that the camp had been evacuated and the survivors put on a ship for Norway, deliberately with the intention of getting them sunk by allied planes, and they were, in fact, bombed and set on fire. Some survived and were landed at Lubeck. I got in to Lubeck on the morning of the German disintegration, and saw the surrender of a German army with units breaking up into rabble crowds. The P.O.W. areas were a sight never to forget. The German forces had been at their last gasp.

On 1st June, 1945, we moved from the North to Goslar in the Harz mountains and took over an area nearly a hundred miles square from the Americans. My unit had to try and arrange feeding and supervision for hospitals containing nearly 40,000 German casualties, and it was a busy time. Later we moved to Hanover and from there in September, 1945, I was posted A.D.M.S. to the 5th British Infantry Division in Brunswick. The war was over and I found time to get some ski-ing in the Harz and plenty of riding. I was sorry to leave, but felt it was time to get back to civilian life and prepare for the future.

This article has proved to be much longer than originally intended. So many scenes spring to mind and when once started it is difficult to know what to include and where to stop. I was asked to recount personal experiences. If the recurrent personal pronoun is wearisome, I can only beg the reader's indulgence for what is an unaccustomed task.

Reviews of Books

Endocrine Disorders in Childhood and Adolescence. By H. S. Le Marquand, M.D., M.R.C.P., and F. W. H. Tozer, M.D., M.R.C.P. Pp. x., 298. Illustrated. London: Hodder & Stoughton. 1943. Price 15s.—The authors of this book have succeeded admirably in their aim of presenting the results of ten years' work in a general medical out-patient department on the investigation and treatment of endocrine disorders in the child and adolescent. There is a useful introductory description of the physiology of the endocrine glands, and the usual endocrine syndromes are then well classified and carefully described, stress being laid throughout on clinical diagnosis. The sections on treatment are of particular merit, being essentially practical, that on the treatment of the overweight child being worthy of special mention, although the authors appear to take a more optimistic view of pituitary whole gland in treatment than is warranted by the experience of most physicians. In subsequent editions one would hope to see fuller accounts of some of the newer and more highly potent endocrine preparations, such as those of gonadotrophic hormones and pitressin in oily solution. The subject matter is attractively presented, with many useful illustrations and tables. The book should be of great value to medical students and general practitioners.

Infant Feeding in General Practice. By J. V. Braithwaite, M.D., F.R.C.P. Second Edition. Pp. xii., 165. Bristol: John Wright & Sons Ltd. 1943. Price 7s. 6d.—In the second edition of this little book the author has again achieved his object of producing in simple form a comprehensive summary of this subject, for general practitioners essentially, but equally valuable for the student. The author, himself a general practitioner until just before the publication of this edition, stresses the practical aspect and the trivial difficulties encountered in practice, but, at the same time, gives sufficient theoretical knowledge to put his arguments on a sound basis. The section on the chemistry of infant nutrition is particularly welcome in this respect. The early chapters on breast-feeding are full of sound advice and free from dogmatic teaching, but the inference that the breast-fed child does not need extra vitamins is not in accord with modern teaching. It is also regrettable that more space has not been devoted to practical details of diet during the difficult weaning period. Altogether this may be considered a most useful pocket handbook which should help to dispel the mass of ignorance which often surrounds this important subject.

Quarterly Review of Pædiatrics, Vol. I, No. 1. Washington, D.C.: Washington Institute of Medicine. 1946. Annual subscription, 54s.—This new journal will be welcomed by all who endeavour to keep abreast of progress in Pædiatrics. The Editorial Board includes many eminent American Pædiatricians, which should be a guarantee of the high standard to be expected. Abstracts and references to current literature have been collected from world pædiatric literature and appear to be exceptionally comprehensive. The abstracts are well selected and written concisely, but with adequate detail, and useful editorial comments are added. The classification, in systems and special subjects, gives a comprehensive review of certain special subjects, but the reader might be helped by a list of cross references at the end of each section. As an example, the section on the Newborn does not include references to penicillin treatment or psychological investigations in this age group, these having been included under other special sections. This deficiency is only partially remedied by the careful subject index. In the American tradition, printing and general set-up is good.

Aids to Medical Diagnosis. By G. E. FREDERICK SUTTON, M.C., M.D., M.R.C.P. Sixth Edition. Pp. viii., 308. Illustrated. London: Bailliere, Tindall & Cox. 1946. Price 6s.—The Sixth Edition of *Aids to Medical Diagnosis* has been entrusted to Dr. Sutton, and this revision in no way falls short of the previous ones. Many of the sections have been completely rewritten and new work has been very adequately included. In particular, the chapter dealing with "Diseases of the Heart and Bloodvessels" deserves praise for its comprehensiveness and clarity of writing. "Diseases of the Blood" is another up-to-date chapter, the references to the Rh factor are brief and serve as an introduction to a complex and, at present, incompletely unravelled problem. The new chapter on the Electroencephalogram will prove helpful and easy to follow. Altogether, this is an extraordinarily useful little compendium for busy practitioners and for students.

Editorial Note

University of Bristol £300,000 Extension Scheme.*

In honour of Mr. Winston Churchill, Chancellor of the University of Bristol for nearly twenty years, an appeal for £300,000 has been launched to cover the cost of a great university centre on St. Michael's Hill, closely adjacent to the present University buildings, and the halls of residence focussed around Wills Hall, Stoke Bishop.

The appeal was launched at a meeting on October 30th in the great hall of the University, at which the Lord Mayor Alderman James Owen presided, supported by the Sheriff Mr. Harry Crook, the Vice-Chancellor Sir Philip Morris, members of the Court, Council, Senate and Alumni; Lord Dulverton, Lord Bledisloe, Admiral Sir James Somerville, and many leading West Country men. It was announced that before the appeal had been launched subscriptions totalling £136,432 had been promised, including £50,000 from Lord Dulverton and £25,000 from the Imperial Tobacco Company, of which he is Chairman.

The guest of honour was Sir Henry Tizard, President of Magdalen College Oxford. He said it was now generally expected that the Universities of England and Wales should double the number of their students within ten years if possible. The view had been expressed that doubling would mean lowering standards, but he was convinced there was no need for that if secondary education developed as they all hoped it would. It was nonsense, he said, to suggest that there would be no occupations for graduates.

The general opinion was that the extension of the University was desirable and practicable. "Bristol has a clear duty and a great opportunity," he continued. "It seems to me it has all the assets except one—finance—to build up a University which can in time rival the ancient cities of learning at Oxford and Cambridge,

* *Reprinted from* "The Times," Wednesday, October 30th, 1946.

not only to the benefit of the country, but even to the benefit of Oxford and Cambridge.

" Bristol is worthy of a residential university of first rank. My rough estimate of the cost of creating a great University for Bristol, of 3,000 or more students, of whom every single one would spend at least one or two years in university residence, would be at least £5,000,000. I am asked if this policy is likely to commend itself to the Government. Why should not the Government in these Socialist times find the money ? It is logical, but in practice much is to be said against it. The need to preserve the essential autonomy of the Universities, we are convinced, is vital. We should show we are prepared to find a large proportion ourselves."

The appeal is based largely on the pressing need for residential accommodation for students, who by October of next year are expected to number 3000 : and it is proposed to provide additional halls of residence named after Mr. Churchill, for both men and women. New Medical and Engineering schools and a school of Veterinary Science are also planned.

Obituary

CHARLES EDWARD KYNASTON HERAPATH, M.C., M.D. (Lond.)

CHARLES HERAPATH came of a distinguished Bristol family of scientists and doctors. William Herapath held the chair of Forensic Medicine and Toxicology (jointly with Dr. J. A. Symonds) in the Bristol Medical School. He died in 1868. His son, William Bird Herapath, was famous for his researches on quinine salts and became F.R.S. W.B.'s son, Dr. C. K. C. Herapath, made a name for himself as a general practitioner in Bristol and was the father of the subject of this memoir.

Born in 1882, he was educated at Clifton College. He left school at the age of sixteen, when he had passed the London Matriculation, and was educated medically at the University College, Bristol, and the B.R.I. He qualified in 1907, and after House appointments at the B.R.I. (he was a brilliant House Physician) he went to London in 1910 and passed the M.D. examination in the University of London. When he came back, he joined the staff of the Bristol Dispensary, but kept in close touch with the B.R.I. He was a very welcome visitor to the residents of those days and it enabled him to keep in contact with Cardiology.

At the outbreak of the first world war he, in company with his friends Reggie Statham, John Harty, Henry Goodden and others, left the B.R.I. for the services. He did not leave his company in the Third South Midland Field Ambulance throughout the whole war. He was awarded the M.C. and gained the highest esteem and affection from his men.

Soon after his return from the war, he gave up his General Practice and Dispensary appointment and started his real career as Consulting Physician and Cardiologist. He was appointed Assistant Physician, and later Physician, to the B.R.I. He held many posts in outlying hospitals, and was the Dean of the Faculty at the B.R.I. from 1934 onwards. He was secretary to the Bath & Bristol branch of the B.M.A. from 1923–34, and was also a member of the Bristol Medico-Chirurgical Society, the Association of Physicians, and the Cardiological Society. A most zealous member of the latter, he was held in high esteem by his fellow Cardiologists. He was an enthusiastic Mason and joined St. Vincent Lodge, in due course passing through the Chair and attaining high rank in the Province of Bristol.

Charles Herapath's honesty and complete incapacity for any intrigue was patent to all. His unbending integrity earned him the respect and esteem of all his colleagues. In his practice he was well-liked by his patients, and few people knew of his numerous acts of kindness to those in straitened circumstances.

He had always a love of "gadgets," and it was MacKenzie's Polygraph, just introduced when he was a House Physician, which led him into Cardiology. How well the writer remembers him coaxing that rather temperamental instrument into activity and the joy with which he examined his tracings! Later on, he naturally took to the Electrocardiograph and mastered the vagaries of the string Galvanometer.

An early possessor of a motor-bicycle, his chief joy was tuning it up; and he was extremely scornful of the writer, who rode a similar machine but did not understand how or why it went. He built himself a wireless set in the early days—a fearsome contraption of wires and valves, which nevertheless worked satisfactorily.

He was also very fond of ceremonial, and it was this feature that really intrigued him as a territorial officer; but he made himself highly efficient in all other activities connected with his duties. It was a great disappointment to him that, after the first world war, the Third South Midland Field Ambulance was disbanded by the Geddes axe. He would have enjoyed commanding it and would have done it very well. His Masonic activities were undoubtedly another symptom of his love of ceremonial, and he even enjoyed the University functions in academic dress.

Very happy in his home and marriage (he married Miss Phyllis Bracey of Great Yarmouth in 1921), he intended to retire into the country and acquired a property at Keynsham. Soon after the outbreak of the second world war he was obviously a sick man, but his courage and pertinacity enabled him to do his work as well as ever. It was a tragedy that he never lived to enjoy his garden in the country.

He leaves a widow, a daughter and a son; the latter is a fourth year medical student at Bristol University. We offer to them our deepest sympathy.

Meetings of Societies

Bristol Medico-Chirurgical Society

The Annual General Meeting of this Society was held at the Physics Lecture Theatre of the University on Wednesday, 9th October, at 8.15 p.m.

Dr. H. H. Carleton was in the Chair, and eighty-six members and guests were present:—

1. After the minutes were read and approved, the Secretary read a letter from Dr. Maarschalk of Arnhem, suggesting interchange of visits between medical men of Bristol and Arnhem.

2. The nature of the forthcoming Clinical meeting was then discussed. It was decided to show about eight cases from the stage in the course of the evening, and to limit the discussion so as to get through this programme in one and a half hours.

3. Dr. Carleton then resigned his chair to the new President, Mr. H. Chitty.

A vote of thanks to the retiring President was proposed by Dr. Orr-Ewing and seconded by Mr. Duncan Wood. The new President then gave his presidential address entitled "Back to Work." Mr. Chitty covered the whole problem of returning the workman to his employment after serious injury. The address was most interesting and was illustrated by a film. A vote of thanks for the presidential address was proposed by Mr. Jackman and seconded by Dr. Richard Clarke, and carried with acclamation.

4. Annual reports of the Secretary and Treasurer were then read.

5. The Treasurer revealed a balance of about £800 in hand' although the last year's expenditure had exceeded receipts by nearly £400. This was, however, accounted for by the several non-recurring items, including £250 sent to the Medical War Relief Fund. Two appeals for financial assistance from the Society were referred to the Committee for their recommendation.

6. The Editor of the *Journal*, Dr. Nixon, gave his report, which was accepted (see pp. 155–6).

7. Election of Officers for the ensuing year :—

The *Honorary Secretary*, Mr. A. L. Eyre-Brook, and the *Honorary Treasurer*, Dr. Sutton, were re-elected to serve a further year.

Medical Librarians.—It was suggested that the Professors of Medicine, Obstetrics and Pathology should serve again, and that they should have power to co-opt Professor Milnes Walker, who had already been proposed for membership.

Members on the University Library Sub-Committee.—It was suggested from the Chair that the three Clinical Professors should be asked to watch the interests of the Society on this Sub-Committee. This was approved.

The Honorary Treasurer's Report will appear in next issue.

The Programme for the 1946–47 Session.

FEBRUARY.—Professor H. J. Seddon will give a paper on "**The Infantile Paralysis Epidemic in Malta.**"

During the three remaining meetings, we are hoping to have an address from a guest speaker on some pediatric problem, a paper on the "**Rhesus Factor**" by Dr. Beryl Corner and Dr. Tovey, and an evening devoted to short papers.

Editor's Report

SINCE the beginning of 1940, issues of the *Journal* have been as follows :—

1940	...	Nos. 215	216	217
		Spring	Summer	Winter
1941	...	Nos. 218	219	
		Spring	Autumn	
1942	...	Nos. 220	221	
		Spring	Autumn	
1943	...	No. 222 Autumn		
1944	...	No. 223 Summer		
1945	...	No. 224 Autumn		
1946	...	Nos. 225	226	227
		Spring	Summer	Autumn

It must be remembered that the *Journal* was founded and exists for publishing the Transactions of the Society. Since meetings of the Society were suspended during the war there were no Transactions to publish and, in consequence, the issues of the *Journal* were greatly reduced. With restrictions on paper, the size of the *Journal* was cut down and it was printed in a smaller type.

The reduction in the number of issues and the size of each *Journal* has cut down the cost of the *Journal* as a whole. But printing and publishing costs have risen and if the Society wishes to continue publishing the *Journal* quarterly, the cost of production will have to be met. I estimate that if we are content with a 52-page *Journal*, printed in smaller type (as at present), the cost of each number will be about £50. Advertisements pay part. If we raise the price of the *Journal* from 3s. to 4s. per copy, I think it will be possible to continue without raising the Annual Subscription to the Society. At present the *Journal* receives 10s. 6d. per annum from each member's subscription of 21s. If the amount allotted can be increased to 16s., there will remain 5s. of the subscription for the other expenses of the Society.

The Treasurer believes this will be sufficient for our present expenses.

Non-members will be asked to pay 16s. instead of 10s. 6d. for the four copies per year.

As regards illustrations, in future, I am afraid, we must revert to our former practice of only publishing illustrations at the author's expense.

HOW THE "JOURNAL" IS FINANCED.

During the years 1939–46 the number of members of the Society was as follows: 1939–40, 267; 1941, 267; 1942, 245; 1943, 245; 1944, 232; 1945, 224; 1946, 255; exclusive of Honorary and Service Members. For the first and last years of that period the subscription was 10s. 6d.; for the other years 9s. yearly. The amount due from the Society for *Journals* supplied to members is, therefore :—

	£	s.	d.
522 subscriptions at 10s. 6d	274	1	0
1,213 subscriptions at 9s. ...	545	17	0
	£819	18	0

1939-46

EXPENDITURE.	£	s.	d.	RECEIPTS.	£	s.	d.
J. W. Arrowsmith, printing, etc. ..	762	15	5	By Non-Members Subscriptions, Payments for Reprints, etc. ..	43	11	6
Postages and Sundries	9	15	0	By Payment from Society on a/c Subscriptions Due	*635	0	0
Audit Fee (7 years)	3	13	6	Balance	97	12	5
	£776	3	11		£776	3	11

* NOTE.—The Society's Accounts shewn on page 49 are for seven years ended September 1945, and therefore do not correspond exactly with the period of the *Journal's* accounts.

LIABILITIES.	£	s.	d.	£	s.	d.	ASSETS.	£	s.	d.	£	s.	d.
Sundry Creditors ..				3	13	6	Due from Society for Members' Subscriptions ..	819	18	0			
Balance at 30th Sept., 1939	105	7	4				Paid on Account ..	635	0	0			
Profit on 7 years ..	87	5	7								184	18	0
Balance at 30th Sept., 1946				192	12	11	Cash at Bank ..				11	8	5
				£196	6	5					£196	6	5

The price of books reviewed by the *Journal* and placed in the Library for the use of members during the seven years is £132 16s. 2d.: this does not include British and Foreign Journals received in exchange for the Society's *Journal*, 103 in 1939 and 70 in 1946.

The Medical Library of the University of Bristol

WITH WHICH IS INCORPORATED

The Library of the Bristol Medico-Chirurgical Society

The following donations have been received since the publication of the list in the last issue.

Professor R. J. Brocklehurst (1)	4 Volumes.
Brompton Hospital (2)	1 Volume.
J. Lacy Firth, Esq. (3)	34 Volumes.
Henry Phipps Institute (4)	1 Volume.
Dr. G. D. Kersley (5)	1 Volume.
Masson et Cie., Paris (6)	2 Volumes.
H. E. Matthews, Esq. (7)	79 Volumes.
Michell Clarke Memorial Fund (8)	16 Volumes.
W. B. Saunders Co. (9)	1 Volume.
J. E. Shaw Bequest (10)	2 Volumes.
A. Rendle Short, Esq. (11)	1 Volume.
Munro Smith Fund (12)	1 Volume.
Dr. J. O. Symes (13)	1 Volume.
A. J. M. Wright, Esq. (14)	20 Volumes.
John Wright & Sons Ltd. (15)	1 Volume.

Unbound periodicals have also been received from Professor C. Bruce Perry, Dr. S. B. Adams, J. C. Shipham, Esq., and Messrs. John Wright and Sons Ltd.

THE ONE HUNDRED AND EIGHTY-SECOND LIST OF BOOKS.

The figures in round brackets refer to the figures after the names of the donors. The books to which no such figures have been attached have either been bought from the Library Fund or received through the *Journal*.

Abramson, D. I. .. *Vascular Responses in the Extremities of Man* (7) 1946
Adriani, J. .. .. .. *Pharmacology of Anesthetic Drugs* .. 2nd Ed. 1946
Bailey, H. H. .. .. *Physical Signs in Clinical Surgery* ..10th Ed. 1946
Bailey, H. H. .. .. *Surgery of Modern Warfare* .. .. (11) 1941
Bailey, H. H., and Love, R. J. M. *Short Practice of Surgery* .. 7th Ed. 1946

Ballenger, W. L., and Ballenger, H. C.	*Diseases of the Nose, Throat and Ear* .. .. 8th Ed. (8)		1946
Bertwistle, A. P.	*Descriptive Atlas of Radiographs* .. .. 6th Ed.		1946
Bishop, P. M. F. ..	*Gynaecological Endocrinology* .. .. (8)		1946
Braithwaite, J. U. ..	*Infant Feeding in General Practice* .. 2nd Ed.		1943
British Medical Association	*A Charter for Health*		1946
Brock, R. C.	*Anatomy of the Bronchial Tree*		1946
Brödel, Max	*Three Unpublished Drawings of the Anatomy of the Human Ear* .. .. (9)		1946
Cameron, H. C.	*Nervous Child* .. .. 5th Ed.		1946
Clark, W. E. le G. ..	*Practical Anatomy*		1946
Conybeare, J. (ed.) ..	*Text-book of Medicine* .. .. .. 8th Ed. (8)		1946
Crosse, V. M.	*Premature Baby*		1946
Cruickshank, E. W. H.	*Food and Nutrition*		1946
Curran, D., and Guttman, E.	*Psychological Medicine* .. .. .. 2nd Ed.		1946
Dandy, W. E.	*Intracranial Arterial Aneurysms* .. .. .. (8)		1945
Davis, L.	*Principles of Neurological Surgery* .. 3rd Ed.		1946
Delay, J.	*L'électro-choc et la Psycho-physiologie* .. .. (6)		1946
Dubos, R. J.	*Bacterial Cell*		1945
Duke-Elder, S.	*Practice of Refraction* .. .. 4th Ed.		1946
Dunlop, D. M., and others.	*Text-book of Medical Treatment* .. .. 4th Ed.		1946
East, T.	*Cardiovascular Disease in General Practice* 2nd Ed.		1946
Farrell, J. T.	*Rontgen Diagnosis of Gastrointestinal Tract* ..		1946
Fearon, W. R.	*Introduction to Bio-chemistry* .. .. 3rd Ed. (8)		1946
Fiessinger, N.	*Clinique et Investigations* .. .. (6)		1946
Fisher, R. A.	*Statistical Methods for Research Workers* 10th Ed.		1946
Frazer, W. M., and Stallybrass, C. O.	*Text-book of Public Health* 11th Ed.		1946
Glaister, J.	*Medical Jurisprudence and Toxicology* 8th Ed. (8)		1945
Gray, H.	*Anatomy* .. .. 17th Ed. (13)		1909
Gray, H.	*Anatomy* .. .. 29th Ed.		1946
Gullan, M. A.	*Theory and Practice of Nursing* .. .. 5th Ed.		1946
Gustafson, G.	*Structure of Human Dental Enamel*		1945
Guthrie, D.	*History of Medicine* .. .. (12)		1945
Hardy, G. H.	*Book of the Fly* .. .. (1)		1915
Harvey, W. C., and Hill, H.	*Milk: Production and Control* .. .. 2nd Ed.		1946
Henry, S. A.	*Cancer of the Scrotum*		1946
Hogeboom, F. E. ..	*Practical Pedodontia* .. .. 4th Ed.		1938
Howell, W. H.	*Text-book of Physiology*. 15th Ed. by J. F. Fulton		1946
Kersley, G. D.	*Rheumatic Diseases* .. .. 2nd Ed. (5)		1945
Kraus, F. (ed.)	*Sparsame Sachgeniässe Krankenbehandlung* 2nd Ed. (1)		1927
Lawrence, R. D.	*Diabetic Life* .. .. 13th Ed.		1945
Levine, S. A.	*Clinical Heart Disease* .. .. .. 3rd Ed. (8)		1946
Lewis, Sir T.	*Diseases of the Heart* .. .. .. 4th Ed. (8)		1946
Lewis, Sir T.	*Pain*		1946
Lewis, Sir T.	*Vascular Disorders of the Limbs* .. 2nd Ed. (8)		1946

Lishman, F. J. G. .. *Handbook for Assistant Medical Officers of Health* 2nd Ed. 1946

Lull, C. B., and Hingson, R. A. *Control of Pain in Childbirth* 2nd Ed. (8) 1945

McElligott, M. .. .. *Spanish–English Medical Dictionary* 1946

McGehee, W. H. O. .. *Text-book of Operative Dentistry* .. 2nd Ed. 1945

MacIntosh, R. R., and Mushin, W. W. *Local Anaesthesia : Brachial Plexus* (8) 1944

MacIntosh, R. R., and Mushin, W. W. *Physics for the Anaesthetist* .. (8) 1946

Marquand, H. S. le, and Tozer, F. H. W. *Endocrine Disorders in Childhood and Adolescence* 1943

Martindale, W. .. .. *Extra Pharmacopoeia.* Vol. 2 .. ..22nd Ed. 1943

May, C. H., and Worth, C. *Manual of Diseases of the Eye* .. 9th Ed. (8) 1946

Micks, R. H. .. .. *Essentials of Materia Medica, Pharmacology, and Therapeutics* .. .. 3rd Ed. 1944

Patton, W. S., and Evans, A. M. *Insects, Ticks, and Venomous Animals* 2 vols. (10) 1929–31

Penicillin : Its Properties, Uses, and Preparations 1946

Prince, M. .. .. .. *Dissociation of a Personality* .. .. .. (1) 1919

Ranson, S. W. .. .. *Anatomy of the Nervous System* .. .. 7th Ed. 1943

Rogers, L., and Megaw, J. W. D. *Tropical Medicine* .. .. .. 5th Ed. 1946

Rogers, L., and Muir, E. *Leprosy* .. .. 3rd Ed. 1946

Romanis, W. H. C., and Mitchiner, P. H. *Science and Practice of Surgery* 7th Ed., 2 vols. 1944

Schall, W. E. .. .. *X-rays* .. .. 5th Ed. (15) 1946

Sheldon, W. .. .. .. *Diseases of Infancy and Childhood* 5th Ed. (8) 1946

Smith, H. W. .. .. *Lectures on the Kidney* .. .. (8) 1943

Smith, J. C. .. .. .. *Chemistry and Metallurgy of Dental Materials* .. 1946

Soffer, L. J. .. .. .. *Diseases of the Adrenals* 1946

Stone, M. J., and Dufault, P. *Diagnosis and Treatment of Pulmonary Tuberculosis* 1946

Thorpe, W. V. .. .. *Bio-chemistry for Medical Students* .. 3rd Ed. 1946

Traquair, H. M. .. .. *Introduction to Clinical Perimetry* .. .. 5th Ed. 1946

True, W. P. .. .. .. *First Hundred Years of the Smithsonian Institution, 1846–1946* 1946

Walker, K. M., and Walker, E. M. *On Being a Father* .. .. .. (1) 1928

Weinbren, M. .. .. *Manual of Toniography* 1946

Widdowson, T. W. .. *Special or Dental Anatomy and Physiology and Dental Histology* .. .. .. 7th Ed., 2 vols. 1946

Wilson, J. V. .. .. *Pathology of Traumatic Injury* 1946

Woolmer, R. .. .. .. *Anaesthetics Afloat* 1942

Wyburn-Mason, R. .. *Vascular Abnormalities and Tumours of the Spinal Cord* 1943

Yellowlees, H. .. .. *The Human Approach* 1946

TRANSACTIONS, REPORTS, JOURNALS, ETC.

Brompton Hospital Reports. Vol. 14 .. .. (2) 1945

Collected Papers of the Mayo Clinic. Vol. 37, 1945 1946

Radiology : Cumulative Index. Vols. 1–39. 1923–1942 1943

Report of Henry Phipps Institute, 1942–43 .. .. (4) 1944

Year-book of Pharmacy, 1870–1945 .. .. (7)

Publications Received

From Messrs. John Wright & Sons Ltd.:

Synopsis of Surgical Anatomy. By A. Lee McGregor. Sixth Edition. 1946. Price 25s.

A Short Handbook of Practical Anaesthetics. By Hôel Parry-Price. 1946. Price 12s. 6d.

Eye Surgery. By H. B. Stallard. 1946. Price 50s.

British Journal of Surgery. Vol. 34, No. 134. October, 1946. Price 12s. 6d.

From Messrs. William Heinemann Medical Books Ltd.:

Text-book of Gynaecology. By J. H. Peel. Second Edition. 1946. Price 21s.

From Messrs. Henry Schumann, New York:

The Centennial of Surgical Anesthesia. Compiled by John F. Fulton and Madeline E. Stanton. 1946. Price $4.00.

A Memoir on a New Use of Sulphuric Ether. By W. T. G. Morton. 1847. With a foreword by John F. Fulton. 1946. Price $1.50.

From Christopher Johnson Publishers Ltd.:

The Renaissance and Its Influence on English Medicine, Surgery and Public Health (Thomas Vicary Lecture, 1945). By Sir Arthur S. MacNalty. 1946. Price 5s.

Local Medical Notes

New Year Honours.—Surgeon Rear Admiral H. R. B. Hull, R.N., has been awarded the C.B.

On Wednesday, October 23rd, the South-Western Division of the Royal Medico-Psychological Association held a meeting at the Bristol Mental Hospital, Fishponds, by kind permission of the Visiting Committee. A number of medical guests were invited, including all members of the Faculty of the Bristol Royal Hospital. They were able to visit the new Research Laboratories, and afterwards were entertained to luncheon. The new laboratories have been designed to investigate certain physiological, biochemical and endocrinological aspects of neuroses and psychoses. The unit is not yet complete, but the main Biochemical Laboratory, animal house, and part of the Biological Department were in use.

The guests saw many pieces of special apparatus in use, including those for investigating metabolism and blood iodine, estimation of keto-steroids, and the oxygen consumption of infantile and adult rats. They also saw hypophysectomy and adrenalectomy of rats. At the close of the demonstration, there was an exhibition of pictures and objects representative of psychotic and neurotic art. As many members as possible stayed for a meeting in the afternoon, to hear a discussion of the research programme and some of the problems of establishing physiological correlates of mental behaviour.

EXAMINATION RESULTS.

Examination passed:—

F.R.C.S., Edinburgh.—H. E. Pearse, M.D., Bristol.

University of Bristol.—Students of the University have recently passed the following examinations:—

M.B., CH.B.—*Final Examination:* J. H. Beatson, P. J. Chapman, Sheila E. Fraser, N. G. Glen, J. C. Little, Dorothy M. Reece, R. Simpson-White, Kathleen G. Wright. *In Group II, completing the Examination:* J. L. Dunscombe, D. Purnell, R. G. G. Taylor.

M.B., CH.B.—*Final Examination (Section I):* Margaret J. Andrews, G. F. Bigwood, F. G. Bolton, D. H. Bowden, W. L. Codd, D. M. Cunningham, R. S. G. Davies, W. J. Gall, N. M. Gibbs, C. E. Halliday, Pamela H. L. Hamilton, G. J. S. Herdman, Stella C. Hill, J. A. G. Holt, S. F. Iles, Una P. Jones, A. H. Laxton, Lisa E. Mandelbaum (*a*), C. A. Mills, G. E. Mitchelmore, Jean E. Morrell, J. P. Norris, G. G. Portch (*a*), E. Saphier, P. W. Seargeant (*b*), M. H. Weiss.

M.B., CH.B.—*Second Examination (Section II):* R. M. Barnes. *In Elementary Pathology, completing the Examination:* (Mrs.) Dorothy Field.

B.D.S.—*Final Examination. In Section II (Dental Surgery), completing the Examination:* E. J. R. Morgan, P. J. Sheldrick. *In Section I only:* R. J. Brownlee, A. J. P. Cousins.

B.D.S.—*Third Examination. In Dental Mechanics and the Properties of Materials used in Dental Practice, completing the Examination:* P. P. Griffiths, A. R. Owen.

L.D.S.—*Final Examination. In Section II (Dental Surgery), completing the Examination:* A. D. Baxter, P. J. Blyth, J. P. Rees. *In Section I only:* T. C. Hughes.

L.D.S.—*Third Examination. In Dental Mechanics and The Properties of Materials used in Dental Practice, completing the Examination:* D. Clifford, L. B. Howell, H. T. Ivory.

D.P.H.—*Preliminary Examination:* R. G. Brennan, Joyce W. Brown, Marjorie Bryan, A. Donaldson, Clara J. Fraser, A. T. Hunt, S. Ludkin, D. G. MacNeill, N. R. Matheson, Marjorie Organ, Joan Williams.

D.P.M.—*Part I:* G. M. Gibb, E. C. Kite, J. McGhie, J. F. D. Murphy. *In Psychology only:* W. L. Jones. *In Anatomy and Physiology of the Nervous System only:* Lorna M. Brierley, H. E. D. Flack, W. A. Heaton-Ward, R. Maggs, H. J. L. O'Sullivan, H. A. Sutherland.

(*a*) With Distinction in Materia Medica, Pharmacy, Pharmacology, etc.

(*b*) With Distinction in Materia Medica, Pharmacy, Pharmacology, etc., and in Pathology and Bacteriology.

BOOKS

Telegrams:—PUBLICAVIT, WESTCENT, LONDON
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TEXTBOOK OF OBSTETRICS. By G. I. STRACHAN, M.D., F.R.C.P. (Lond.), F.R.C.S. (Eng.), F.R.C.O.G. Fully illustrated. Royal 8vo. **45s.** net. [*Nearly ready.*

A SYNOPSIS OF ORTHOPAEDIC SURGERY. By DAVID LE VAY, M.S. (Lond.), F.R.C.S. (Eng.). Royal 8vo. With 55 illustration. **15s.** net. [*Just published.*

NOTABLE NAMES IN MEDICINE AND SURGERY. By HAMILTON BAILEY, F.R.C.S., and W. J. BISHOP, F.L.A. Second edition. Profusely illustrated. Crown 8vo. **15s.** net; postage 9d.

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CARDIOVASCULAR DISEASE IN GENERAL PRACTICE. By TERENCE EAST, M.A., D.M. (Oxon.), F.R.C.P. (Lond.). Second edition. With illustrations. Demy 8vo. **12s. 6d.** net; postage 7d.

REGIONAL ANALGESIA. By H. W. L. MOLESWORTH, F.R.C.S. (Eng.). Second edition. With illustrations. Demy 8vo. **8s. 6d.** net.

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